



# Evaluation of the National Flood Insurance Program

## Annual Report 2004-2005

September 2005



AMERICAN INSTITUTES FOR RESEARCH

# **Evaluation of the National Flood Insurance Program**

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The American Institutes for Research (AIR) and its core subcontractors, the Pacific Institute for Research and Evaluation (PIRE) and Deloitte Consulting LLP, are pleased to submit the fourth annual report on the evaluation of the National Flood Insurance Program (NFIP). Significant progress has been made in the past year. One sub-study is complete and there are ten sub-studies nearing completion.

AIR has maximized the resources devoted to the evaluation studies while accommodating the need to address appropriately the required management tasks, including obtaining clearance from the Office of Management and Budget (OMB), performing and monitoring work, updating the annotated bibliography and chronology, preparing reports and briefings, and maintaining overall quality control.

AIR created a national steering committee with members whose expertise is critical to the success of the evaluation. AIR provides all members of the steering committee with monthly summaries of each sub-study's progress, and each member of the committee is also asked to review statements of work as well as draft reports for sub-studies, many of which are heading toward completion.

AIR and its subcontractors inform external stakeholders about the evaluation by making presentations at professional conferences. As in the previous year, subcontractors have continued to present their studies and findings at various events. In June 2005, Dewberry & Davis presented interim findings from its community compliance sub-study at the Association of State Flood Plain Managers annual conference in Madison, Wisconsin. At the same event, the State Activities team presented a summary of their sub-study and some preliminary recommendations. RAND presented interim findings from the Market Penetration sub-study at the 2005 National Flood Conference in Marco Island, Florida.

AIR continues to work on a comprehensive chronology of floodplain management and a searchable annotated bibliography of the NFIP. The 2004 editions of both documents currently are posted on FEMA's website. AIR is updating both documents and plans to make them available on FEMA's website.

Although the evaluation has been divided into multiple studies, AIR's oversight will ensure all studies contribute to the ultimate goals of the evaluation as a whole. This work involves clarifying and strengthening the studies' relationship to each other. A primary consideration for AIR has been to ensure that all studies address the four ultimate goals of the NFIP (as identified in the *Design for the Evaluation of the NFIP*, 2002): 1) decreased risk of flood losses; 2) reduced costs and adverse consequences of flooding; 3) reduced demands and expectations for federal disaster assistance after floods; and 4) restoration and preservation of the natural and beneficial values of floodplains.

The summaries of the studies' progress reported in this document show that, while the studies are behind the original schedule, AIR and its subcontractors have made considerable progress, with many reports nearing completion. The NFIP evaluation team has had to overcome a number of obstacles in 2004-2005 and this has extended the planned time period. The studies

have required greater collection of data and refinement of models than anticipated and a few of the studies are encountering unforeseen delays or obstacles in gathering the required data.

There was a delay in obtaining OBM approval for a survey that would be the primary data for one portion of the Environmental and Development Impacts sub-study and provide data for part of the study on Costs and Consequences of Flooding. The OMB clearance was granted in late August, and the survey research effort has begun.

Personnel changes have affected the NFIP evaluation: the project director of the NFIP evaluation and two research assistants departed AIR during this fiscal year. Despite the changes, AIR kept the studies progressing by teaming with additional consultants with expertise in the appropriate fields. AIR has also focused on efficient use of resources, convening a formal telephonic conference of all sub-study leaders to encourage exchange of information and follow-on calls and interactions among study teams. AIR also has made aggressive efforts to help study teams accelerate the completion of their studies while trying to ensure the integrity and overall quality of the studies. Where timeliness and quality are in conflict, AIR has and continues to work with FEMA to make decisions about time priorities while maintaining research quality.

Finally, during the recent hurricane season, some contractors and consultants have been called to evaluate damage and to provide other consulting services, causing delays in final report drafting. Two sub-study teams also are collecting additional data and re-evaluating their results to reflect the impact of Hurricanes Katrina and Rita. While this may lead to some delay, it will also allow the NFIP Evaluation to benefit from lessons learned during the 2005 hurricane season.

Despite these challenges, the NFIP evaluation is progressing toward a successful conclusion. This will be the final year of the evaluation, with all sub-studies planned for completion. A final report on the NFIP Evaluation, with findings, conclusions and recommendations will be completed during the summer of 2006.

Table 1 lists the studies that AIR and its subcontractors are conducting. A detailed description of each of the studies follows.

**TABLE 1: NFIP Evaluation Studies, 2004-05**

<b>Topic</b>	<b>Status</b>	<b>Lead Organization</b>
Costs and Consequences of Flooding	Nearing completion of 4 of 7 sections of draft report	PIRE
Environmental and Developmental Impacts of the NFIP	Drafted section on EO 11988 and drafting remaining sections	Walter Rosenbaum University of Florida
Evaluating Community Compliance	Revising draft report (Part A)  Completing analysis and drafting report (Part B)	AIR and Jacquelyn Monday, JLM Associates (Part A) Dewberry & Davis (Part B)
Mandatory Purchase	Complete	AIR
Mapping Anticipated	Awaiting data from one county	ABS Consulting

Development		
Market Penetration	Revising final report in response to reviewers	RAND Corporation
Measures for Evaluating and Assessing Performance	Phase 1 complete	PIRE
Minimal Building Standards	Completing analysis and drafting report	Christopher P. Jones and Associates
The NFIP's Actuarial Soundness	Revising report in response to AIR review	Deloitte Consulting LLP
State Activities in Support of the NFIP	Completed data collection and drafting introductory and methodological sections of report	AIR and Leigh Morgan, Salter's Creek Consulting, Elliott Mittler
The 1 Percent Annual Chance Flood Standard	Completed data collection and outline; revising outline in response to Hurricane Katrina, and beginning draft.	The University of Maryland

### Costs and Consequences of Flooding

The purpose of this sub-study, which began in June 2004, is to assess the impact of the NFIP on the costs of flooding, how costs are distributed among premium payers, and how well the NFIP program serves low-income households. The sub-study also examines the consequences of flood hazards on municipal revenues and expenses, as well as the impact on local economic activity, employment and bond ratings. The Pacific Institute for Research and Evaluation (PIRE) is the core subcontractor completing this project.

PIRE has finished gathering and analyzing data and has drafted report sections for most elements and issues of the project. PIRE has completed evaluation of the impact that the NFIP has had on the costs of flooding and the distribution of costs among payers, has drafted the final report, and plans to deliver the report to AIR in October 2005. PIRE has also completed its evaluation of the impact of floodplain management on property values and the economic analysis of the consequences of flood hazards on local government finances and bond ratings, and is completing its chapters on these segments of work, to be delivered to AIR in mid-October, 2005. PIRE has also estimated the effect of flooding on local economic activity and federal economic transfers to regions and is drafting a chapter on this issue. Future work includes drafting a report on the impact of the NFIP on low-income inhabitants in November.

### The NFIP's Environmental and Developmental Impacts

Dr. Tony Rosenbaum of the University of Florida is the consultant leading this sub-study, which addresses several important issues concerning the NFIP's relationship to the environment and to the development of coastal areas.

In the evaluation of FEMA's implementation of NEPA and Executive Order 11988, Dr. Rosenbaum has completed all interviews, documentation and literature searches, and submitted a draft report to AIR for review.

In the review of flood risk perception and response, Dr. Rosenbaum is coordinating a survey of government leaders and NFIP policyholders with the Florida Survey Research Center, which will interview subjects in six states. The development and testing of interview protocols and completion of preliminary surveys among each major group to be interviewed has been completed. A sample base has been developed and initiation of telephone interviews with samples of the identified groups has been completed.

Also for this task, a national survey of homeowner flood risk perception is planned, and OBM clearance to conduct the survey has been obtained for the final interview protocol. Initial pretesting of the national interview protocol has been completed, a sample has been drawn, and interviews will begin in fall, 2005.

Another research effort in this sub-study is an assessment of the extent to which six specific components of the NFIP Community Rating System (CRS) have encouraged NFIP communities to exceed minimum NFIP eligibility requirements in protecting the natural and beneficial uses of community floodplains. Work on this task included creation of a database of CRS communities and discussions with FEMA's national CRS administrative office concerning documentation available through FEMA.

There is a concern that the NFIP encourages the development of land and endangerment of species protected by the ESA, which is being addressed by a research effort in this sub-study. The research effort on this task includes a survey of federal litigation related to the NFIP's impact on ESA-covered lands and species and an identification of consultants and other informants.

The final research task in this sub-study evaluates whether the prohibition against NFIP insurance coverage on properties protected by the Coastal Barrier Resource Act (CBRA) has had a significant impact on the character and pace of development within the Coastal Barrier Resource System. A related, secondary research issue is whether some CBRA lands may be improperly covered by NFIP, as indicated by a 2001 FEMA Inspector General report. Progress on this task includes an initial inventory of the CBRS lands and the selection of a sample to be studied.

### Evaluating Community Compliance

Part A of this two-part sub-study assesses the processes that affect community compliance with NFIP regulations. Jacquelyn Monday of JLM Associates has joined AIR's team to edit the draft report, refining the findings and recommendations, highlighting issues with the CRS, coordinating the draft report with findings and recommendations of other studies in the NFIP Evaluation Project, and integrating them with the companion Compliance Part B sub-study.

The Part A report examines the NFIP's model for promoting, monitoring, and enforcing community compliance with the NFIP through use of such tools as its Community Assistance Visits and Community Assistance Contacts, training and technical assistance, Community Information System, submit-for-rate insurance policies, and imposing sanctions on noncompliant

communities. The report also analyzes the levels of compliance in communities participating in the CRS. The report highlights several special aspects of NFIP compliance, such as variances, substantial damage and substantial improvement declarations, and Letters of Map Revision based on Fill (LOMR-Fs). Some trends in community compliance are identified and ways of assessing overall levels of community compliance nationwide are examined. The report concludes with recommendations for improvements to the compliance process.

Dewberry is the subcontractor for the Part B report of the Community Compliance sub-study. Dewberry is assessing the percentage of uninsured and insured post-FIRM structures in SFHAs that are in compliance with the NFIP's floodplain management requirements.

Dewberry worked with AIR and FEMA to choose 15 community clusters, from which a random sample of communities and structures within those communities was selected to be examined for compliance. In January 2005, Dewberry completed its survey of 1,250 structures in 50 communities located in 10 community clusters.

Although the sub-study is not a random sample and does not include a sufficient number of communities or structures to provide a national rate of compliance, the results are indicative of the levels of compliance in NFIP communities and the common types of compliance problems. One of the most noteworthy findings is that 95 percent of the buildings surveyed had the main floor at or above the BFE or within 6 inches of that elevation. There were, however, widespread violations of the openings requirement and the requirement that mechanical and utility equipment be elevated above the BFE. The interim findings from the sub-study were presented at the 2005 Association of State Flood Plain Managers annual conference in Madison, Wisconsin.

Analysis of rates of compliance by type and size of community, geographical area, foundation type, occupancy, building type, and age of the building is proceeding. Dewberry anticipates completing a draft report by the end of October 2005.

Although the two sub-studies on community compliance are intricately linked, because they cover expansive issues and include very involved analyses, AIR is planning to publish Part A and Part B as separate sub-studies. Nonetheless, each study will discuss the findings of the other and discuss their applicability to the results found.

### Mandatory Purchase

This sub-study is complete. It is a comprehensive analysis of the processes that lenders and other federal agencies use to require the purchase and renewal of flood insurance on structures in SFHAs that have loans: a) that are from federally regulated lenders; b) that are insured, subsidized, or guaranteed by federal agencies; or c) that are sold or transferred to a government-sponsored enterprise.

The report identified the legal roles and responsibilities of all parties, including banks, regulators, property owners, insurance companies and agents, and others; the procedures used to comply with the legal requirements; areas of overlap and duplication; and any gaps in the law or



its implementation, which may result in noncompliant loans and structures. The completed report may be viewed at [http://www.fema.gov/pdf/nfip/mandpurch\\_0305.pdf](http://www.fema.gov/pdf/nfip/mandpurch_0305.pdf)

### Mapping Anticipated Development

The purpose of this sub-study is to assess the advantages of reflecting anticipated development in FIRMs. This sub-study will draw on data collected about case study communities, as well as from interviews conducted with the pilot communities. ABS Consulting, the lead contractor on this sub-study, captured local future conditions and current condition hydrology from previously-prepared studies for each case study community, and estimated damage from varying degrees of flood events using the HAZUS flood model methodology. The sub-study also involved a literature review regarding issues that affect the costs and benefits of mapping the hydrology of future conditions.

The case study communities chosen were counties in North Carolina, Florida, Colorado and Texas. In addition, another community was added in 2003, DuPage County, Illinois. The case study communities were chosen to reflect varying types of watershed (riverine or coastal), sizes of watershed, and population growth. Some of the communities had already mapped future conditions and others had not.

ABS Consulting has completed literature review, data gathering, interviews and analysis for all case studies, except one county, which has not yet submitted its data. The report will be finalized once all the data is obtained.

### Market Penetration

The purpose of this sub-study is to estimate the percentage of single family homes in SFHAs that have flood insurance and the rate of compliance with the NFIP mandatory purchase requirement. The sub-study also examines the relationship between market penetration and federal disaster assistance, and the relationship between market penetration and compliance with NFIP requirements. The sub-study will help to better understand the costs and benefits of increasing market penetration and to identify opportunity for policy growth.

RAND is the lead contractor of this sub-study. The report currently is undergoing technical review. The revised draft will be provided to FEMA by late November 2005 with the final report expected to be ready for public release in January 2006.

RAND presented interim findings from the sub-study at the 2005 National Flood Conference in Marco Island, Florida.

### Measures for Evaluating and Assessing Performance

The purpose of this sub-study is to evaluate the NFIP's performance assessment and evaluation measures and to recommend improvements if needed. The sub-study has been conducted in two phases--the first phase focused on current practices and the second phase on



reviewing how these measures fit into the overall evaluation. PIRE is the core subcontractor performing this project.

The initial phase summarized the views of 15 key informants and subject matter experts into a matrix of potential NFIP performance evaluation measures. As part of the second phase, PIRE plans to finalize its recommendations for performance measures to be used in the NFIP evaluation. PIRE developed a questionnaire about suggested evaluation measures to include in the final report and used it to gather suggestions from NFIP Evaluation team members.

### Minimal Building Standards

The purpose of this sub-study is to evaluate the effectiveness of NFIP's building standards through a review of literature and a review of flood loss and damage data for structures and communities. The sub-study calculates the costs and benefits of modifying the NFIP's building standards across defined ranges of flood conditions and building configurations, differentiated by flood hazard zone.

The subcontractor on this sub-study, Christopher Jones & Associates, is continuing analysis of building design and cost calculations. A draft report is scheduled for completion in November 2005.

### State Activities in Support of the NFIP

AIR designed and began the sub-study on state activities in support of the NFIP and has since been joined by the consultants Leigh Morgan of Salter's Creek Consulting and Elliott Mittler, who are drafting the report. This sub-study began in April 2004 and is designed to gain insight into the proper roles of the states in floodplain management, and to determine ways in which state participation in the National Flood Insurance Program can be improved.

During the first half of the fiscal year, the team obtained information to develop hypotheses, reviewed background documents about the states and their floodplain management resources, and identified the states and state agencies that would be included in the sub-study. AIR created a study approach, a methodology and an interview plan of issues to discuss with respondents. These underwent review, revision, and analysis based on pilot interviews with state officials and others in Louisiana in February 2005.

The team chose an initial group of states based on hypotheses developed in consultation with FEMA and other experts. States were chosen to provide variance along the primary factors of interest including effectiveness of floodplain management programs, strength and formality of the legal and institutional foundations of the program, types of agencies housing the program, and presence of coastal communities. The team also added some states to the sub-study that provided an opportunity to learn about interesting institutional differences or approaches.

The team has conducted 26 interviews with officials in ten states—Arizona, California, Florida, Louisiana, Maine, Missouri, North Carolina, Texas, Washington, and Wisconsin. The team also will broaden the scope of the sub-study by drawing additional study material from

interviews conducted in eight other states, as part of another effort in the NFIP Evaluation, the Compliance Report (Part A).

The team has completed its report outline and currently is drafting the literature review and methodology report sections. The team presented a summary of the sub-study and some preliminary recommendations at the Association of State Floodplain Managers Conference in Madison, Wisconsin in June 2005.

### The 1 Percent Chance Annual Flood Standard

The purpose of this sub-study is to assess the adequacy of the 1 percent annual chance flood standard and to address possible impacts of changing the standard. The sub-study also will determine the implications of making the 1 percent standard the threshold for mandatory insurance purchase and flood management ordinances and to assess whether the standard is adequate to reduce flood loss risks.

The lead contractor is the University of Maryland. The University team conducted a detailed literature search; interviewed key officials at the federal, state and local levels about the 1 percent standard; collected data concerning flood damage at various flood recurrence intervals; developed information about alternatives to the 1 percent standard used in the US and other countries including for critical facilities; analyzed the impact of the standard on natural and beneficial floodplain use; and examined the impact of applying the 1 percent standard to levee incorporation in the NFIP.

To determine the relationship between flood recurrence intervals and flood damages, the team analyzed databases, gathered data from other sources, and reviewed FEMA flood insurance policy claims databases. The team found that the databases did not have some of the key data needed for complete analysis. The team also obtained data on recurrence intervals and flood damage from the Corps of Engineers, the states of California and Maryland, PIRE and through the use of the HAZUS model.

The team attended a forum on the 1 percent standard sponsored by the Association of State Floodplain Managers (ASFPM) Foundation and contributed to the forum's report. The team also shared data with another NFIP sub-study, the Environmental and Developmental Impacts sub-study. The team attended an international conference and discussed the issue of alternatives to the 1 percent standard with flood managers from 11 countries.

The team has completed a report outline and is drafting its final report. Hurricanes Katrina and Rita have raised issues about the 1 percent standard in coastal areas and the team is re-examining several issues in the light of these events. The draft report will be delayed, but the additional analysis will add to the breadth of research and evaluation.

### The NFIP's Actuarial Soundness

Deloitte Consulting, the lead contractor on this sub-study, continued work assessing the NFIP's actuarial soundness. The sub-study focuses on whether actuarial soundness should be

one of the NFIP's goals, whether the NFIP is making progress in moving toward actuarial soundness, and whether the inherent impediments to meeting such a goal are critical in evaluating the viability of actuarial soundness for the NFIP.

In October 2004, Deloitte completed an appendix comparing and contrasting the NFIP's ratemaking process to the insurance industry's methods used in the property lines of the insurance business. Deloitte has worked with FEMA to obtain the needed loss and premium information and discussed the feasibility of further analysis. Deloitte has worked with FEMA staff and conducted its review using data from FEMA's databases.

A preliminary draft report for internal review had been planned for delivery to AIR in November 2005. Due to the need to re-evaluate the findings to reflect the impact of catastrophic events on the actuarial soundness of the NFIP, there will be a delay in the delivery of the preliminary draft.

### Summation

AIR and its evaluation partners have had a challenging and productive year. Despite unforeseen delays and obstacles in approvals to proceed and access to data, the team has made great progress toward finalizing the sub-study reports and has shared preliminary results of some of these with FEMA.

AIR is making every effort to accelerate completion of both the sub-studies and the overall evaluation, while maintaining the integrity and overall quality of the sub-studies. AIR and its partners are well on their way to the completion of the NFIP Evaluation, and are looking forward to the opportunity of contributing to the ongoing conversation on the role, contributions, and potential of the National Flood Insurance Program in serving our communities, states and nation.

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